STC-1
TOUCH SCREEN REMOTE OWNER'S MANUAL

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UNPACKING AND INSPECTION

After unpacking the STC-1, save all of the packing materials in case you ever need to ship the unit.

Thoroughly inspect the STC-1 and the packing materials for signs of damage. Report any shipment damage to the carrier at once. Report any equipment malfunctions to your dealer.

Precautions

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- *Reorient or relocate the receiving antenna.*
- *Increase the separation between the equipment and the receiver.*
- *Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.*
- *Consult the dealer or an experienced radio/TV technician for help.*

▲WARNING
TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THE UNIT TO RAIN OR MOISTURE.

▲WARNING
DO NOT DEFEAT OR REMOVE THE GROUND PIN ON THE POWER PLUG.

▲WARNING
THIS UNIT CONTAINS NICKEL-CADMIUM BATTERIES. RECYCLE OR DISPOSE OF PROPERLY.

Read Instructions. *Read all safety and operating instructions before operating the unit.*

Retain Instructions. *Keep the safety and operating instructions for future reference.*

Heed Warnings. *Adhere to all warnings on the unit and in the operating instructions.*

Follow Instructions. *Follow operating instructions and instructions for use.*

Heat. *Keep the unit away from heat sources such as radiators, heat registers, stoves, etc., including amplifiers that produce heat.*

Ventilation. *Make sure that the location or the position of the unit does not interfere with its proper ventilation. For example, the unit should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings, nor should it be placed in a cabinet that impedes the flow of air through the ventilation openings.*

Power Sources. *Connect the unit only to a power supply of the type described in the operating instructions, or as marked on the unit.*

Power Cord Protection. *Route power supply cords so that they are not likely to be walked on or pinched by items placed on or against them, paying particular attention to the cords at plugs, at convenient receptacles, and at the point at which they exit from the unit.*

Nonuse Periods. *Unplug the power supply from the outlet when the unit is to be left unused for a long period of time.*

Water and Moisture. *Do not use the unit near water—for example, near a sink, in a wet basement, near a swimming pool, near an open window, etc.*

Object and Liquid Entry. *Do not allow objects to fall or liquids to be spilled into the enclosure through openings.*

Cleaning. *The unit should be cleaned only as recommended by the manufacturer.*

Servicing. *Do not attempt any service beyond that described in the operating instructions. Refer all other service needs to qualified service personnel.*

Damage Requiring Service. *The unit should be serviced by qualified service personnel when:*

- *The power supply cord or the plug has been damaged.*
- *Objects have fallen or liquid has been spilled into the unit.*
- *The unit does not appear to operate normally or exhibits a marked change in performance.*
- *The unit has been dropped, or the enclosure damaged.*

1.0 INTRODUCTION

*The STC-1 is a **PROGRAMMABLE TOUCHSCREEN REMOTE** that is designed to provide infrared control of audio/video and automation systems. Like other "universal" or "learning" remote controls, the STC-1 allows you to consolidate the functions of many independent infrared remote controls into one unit. However, the STC-1 also incorporates a unique programmable user interface, allowing it to provide a simple, intuitive, and customized interface for any system. Before using the STC-1, please read and follow all instructions in this manual.*

1.1 Features

The STC-1 provides superior quality and reliability as well as these specific features:

- *A replacement for all of your system's remote controls. The STC-1 can reproduce all of the commands of almost any other infrared remote control.*
- *A programmable graphic display. The STC-1 has a built-in drawing program that makes it easy to place buttons, text, and symbols anywhere on the display.*
- *A touch-sensitive display. When you want to perform a command, simply touch the display where that command is displayed.*
- *A built-in rechargeable battery pack. The STC-1 can run continuously for up to three hours between charges. Because the remote is normally used only a few minutes per session, the unit typically will run for a week or more between charges. A built-in Fuel Meter monitors the battery level to let you know how much run time is remaining.*
- *A macro function. This feature allows the STC-1 to perform a series of commands by pressing a single button. For example, you could create a macro called **"MOVIE"** that turns on the TV, sets the correct channel, turns on the VCR, dims the lights, and starts playing a movie.*
- *Automatic power-down. The STC-1 turns itself off whenever it is not used for a pre-set amount of time. Touching any area of the display will turn it on again.*
- *A serial port for communication with a special PC interface program for backup and restore of previously programmed displays and IR commands.*
- *Non-volatile memory. The STC-1 will not lose any programmed data if the main batteries fail.*

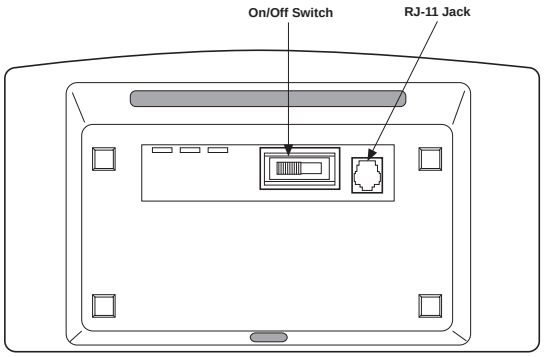
1.2 Important Notes

Please read these important notes about the STC-1:

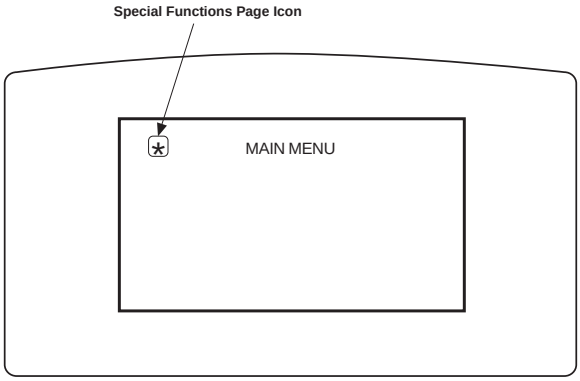
- *The STC-1 should be placed in an area where it is around normal room temperature (between 60˚F to 90˚F). If the temperature is too hot, the display appears dim. If the temperature is too cold, the display appears dark and may respond slowly.*
- *Do not use sharp objects on the touchscreen. It is designed to operate with a firm touch of your finger.*
- *Do not let the STC-1 get wet. It should not be handled with wet hands or placed in an area where it could get wet.*
- *Do not subject the STC-1 to smoke, dust, or vibrations. The display may be damaged from excessive shock or vibration.*
- *Use only the power supply that is provided with the STC-1. Using the wrong type of power supply may result in battery leakage or other damage.*
- *Do not disassemble the unit. The STC-1 contains high voltage circuits that may cause injury if contacted.*

1.3 Getting Started

*The STC-1 is powered-up by touching any area of the display. If the STC-1 does not respond, make sure the switch on the bottom of the unit is in the **ON** position as indicated by the arrow.*



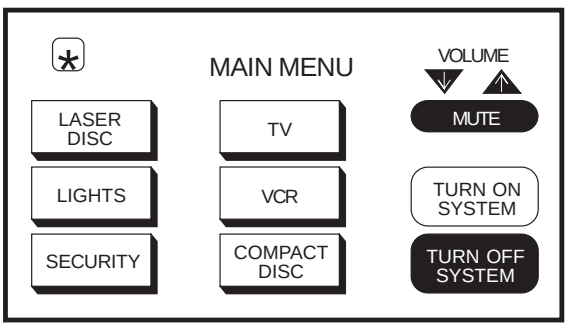
Upon power-up, the STC-1 will display its Main Menu page, which is blank by default, awaiting programming. The default initial screen is shown below



1.4 The Touchscreen Display

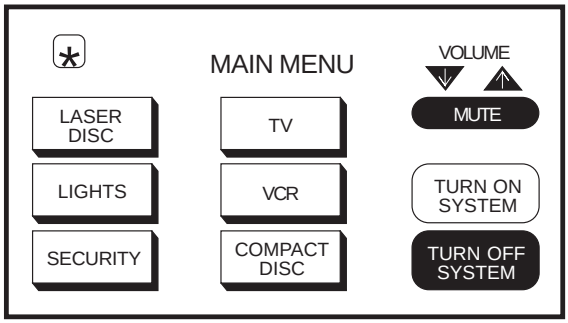
The STC-1 touchscreen display is organized as a series of pages. A page consists of all the information displayed on the screen at one time. Normally each page contains objects (buttons, text, and symbols) that are related in some way. For instance, they may all display information necessary for controlling a particular VCR.

By default the STC-1 has one Main Menu page—all other pages are considered submenus. Any page can contain a button that will display any other page when selected. Normally the Main Menu page is used to display the names of the submenus (e.g., the equipment being controlled). The submenus may consist of one or more pages. The STC-1 will support 22 pages plus the Main Menu page, in addition to the unit's programming screens. A representation of a programmed Main Menu page is shown below.



1.5 The Special Functions Page

The Main Menu page contains a unique icon in its upper left corner. Selecting this icon displays the Special Functions page. This page is used for invoking several built-in functions, viewing the Fuel Meter, and entering the Program Mode.



The built-in functions include:

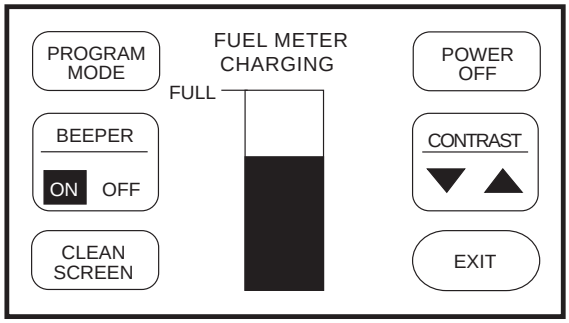
PROGRAM MODE
Press this button to enter the programming mode of the STC-1. If the Access Lock Out is ***ON,*** *the access passcode must be entered or the unit will remain on the Special Functions page, preventing unauthorized individuals from reprogramming the unit.*

BEEPER ON/OFF
These two buttons turn the audible beep on and off.

CLEAN SCREEN
The Clean Screen function temporarily disables the touchscreen, allowing you to clean the screen while it is illuminated without transmitting IR commands or changing the programming. The hourglass counts down the time available (about 12-13 seconds) before the touchscreen becomes active again.

FUEL METER
The Fuel Meter graphically represents the charge status of the internal battery. Please note that the word ***CHARGING*** *will appear above the Fuel Meter when the unit is actually charging. The Fuel Meter will reset only when the unit is fully recharged. When recharging, use only the power supply (DC, 8.5v 2A, pin negative) that is supplied with the unit. You may continue to use the STC-1 as it recharges, although doing so may slow the*

recharging process. The recharging time will take between one and three hours, depending on the battery status prior to recharging.



POWER OFF
This button invokes the Stand-By mode.

CONTRAST UP/DOWN
These two buttons adjust the LCD contrast.

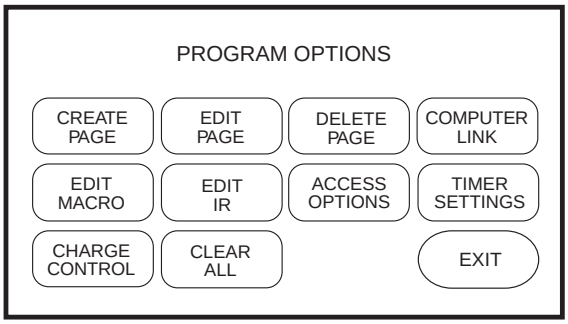
EXIT
*Pressing the **EXIT** button will return you to the Main Menu page.*

1.6 Programming the STC-1

Programming the STC-1 involves a three-step process:

1. *Drawing and linking all of the pages that will become the user interface.*
2. *Teaching the STC-1 the infrared commands from other remote controls.*
3. *Creating macros.*

*All programming steps are initiated from the Program Options page. This page is displayed by pressing the **PROGRAM MODE** button on the Special Functions page.*



There are 11 functions available on the Program Options page:

CREATE PAGE
This function is used to create a new page.

EDIT PAGE
This function is used to place buttons, text, and symbols on a page.

DELETE PAGE
This function is used to delete an existing page.

COMPUTER LINK
*This function toggles the PC communication link **ON** and **OFF** and is used to back up the STC-1 programming with a personal computer. It can also be used to load previously developed pages and IR codes. The interface program, available from JBL, requires a PC running Windows 3.1 and a serial port. Please note that this program is not for editing the pages; it is a library program for backing up the unit as well as reloading the unit with pages you have previously defined.*

EDIT MACRO
This function is used to create, edit, and delete macros.

EDIT IR
This function is used to learn, edit, and delete infrared commands.

ACCESS OPTIONS
*This function is used to program a passcode into the unit and to enable or disable the **PROGRAM MODE** button from the Program Options page. This allows you to limit program mode access to only those people who know the passcode.*

TIMER SETTINGS
This function is used to set the STC-1's stand-by and power-down timers. The stand-by timer defines the length of time the display remains on after the last time a button was pressed. During Stand-By mode, the STC-1's circuits are still energized, but the STC-1 uses much less battery power than when it's running. The power-down timer defines the length of time the STC-1's circuits remain energized after entering the Stand-By mode. During power-down, the STC-1 uses virtually no battery power.

CHARGE CONTROL
You can toggle between the Fast Charge and Trickle Charge modes of the STC-1's battery supply. Normally the unit will be left in Fast Charge mode. The unit will automatically revert to Trickle Charge mode when the batteries are fully charged. If the unit is to be used for only brief periods of time and then recharged, you should select the Trickle Charge mode.

NOTE: When you connect the AC adapter to the STC-1, the Fuel Meter will not reset until the unit is fully charged. It is not necessary to disconnect the STC-1 immediately, for it will automatically enter the Trickle Charge mode. Avoid disconnecting the STC-1 from the AC adapter before it has been fully charged. You may still use the unit while it is charging, although doing so will slow down the charging rate.

CLEAR ALL

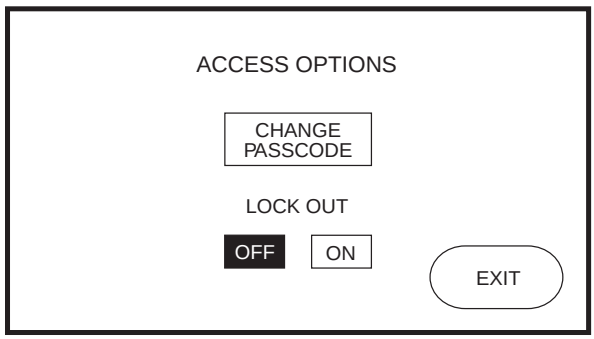
▼***WARNING:*** *The Clear All operation will wipe out all pages and IR commands in the STC-1.*

If you wish to start with a "clean slate," the Clear All option will remove all the buttons, pages, and commands from the STC-1's memory. To ensure that accidental erasure doesn't occur, you must enter the security code before the memory will be erased. If you inadvertently press the ***CLEAR ALL*** *button, simply press the* ***ENTER*** *button on the touchscreen* without entering the passcode *and you will be returned to the Program Options page.*

EXIT
This option is used to return to the Special Functions page.

1.7 Setting the Access Options

To limit access to the ***PROGRAM MODE*** *button on the special functions page, select the* ***ACCESS OPTIONS*** *button from the Program Options page. The STC-1 will display the* ***CHANGE PASSCODE*** *and the* ***LOCK OUT OFF*** *and* ***ON*** *buttons.*



Either select the desired option or press the ***EXIT*** *button to cancel the operation. If the* ***CHANGE PASSCODE*** *button is selected, the STC-1 will display a keypad and prompt you to enter a passcode. The passcode can be any number, from one to four digits in length. After entering a passcode, press the* ***ENTER*** *button on the touchscreen.* **Do not forget the passcode.** *You will be prompted to enter the passcode again for verification. This passcode must now be used to enter the* ***PROGRAM MODE*** *on the Special Functions page if the* ***LOCK OUT*** *button is* ***ON.*** *You can enable or disable the need for a passcode by selecting the* ***LOCK OUT ON*** *or* ***OFF*** *buttons.*

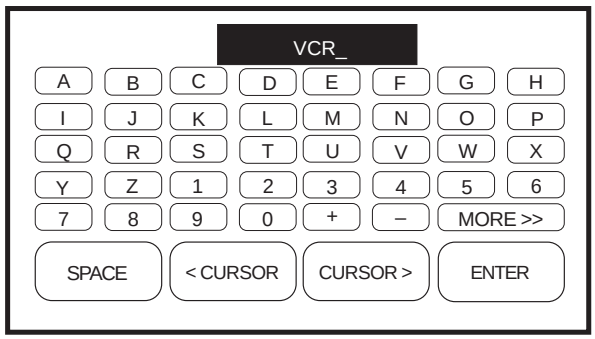
▼***CAUTION: Always use a one- to four-digit passcode. Never press the ENTER button (i.e., no passcode) when the unit prompts you for the passcode.***

2.0 CREATING AND EDITING PAGES

This chapter describes in detail how to program the STC-1.

2.1 Creating a Page

*To create a page, all you have to do is give it a name. To do so, select the **CREATE PAGE** button from the Program Options page. When the text editor is displayed, enter a name of up to eight characters in length. A representation of the Create Page keypad is shown below.*



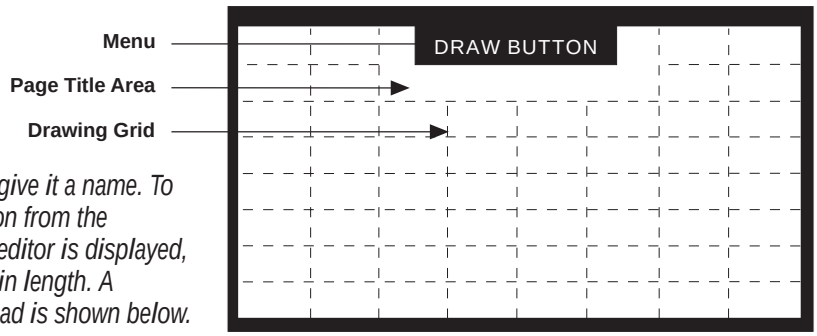
Although the STC-1 allows you to give different pages the same name, using unique names for each page is recommended since these names are used by the PC Interface to catalog a library of pages you have created. For information on using the text editor, see the section "Using the Text Editor" on page 10.

2.2 Editing a Page

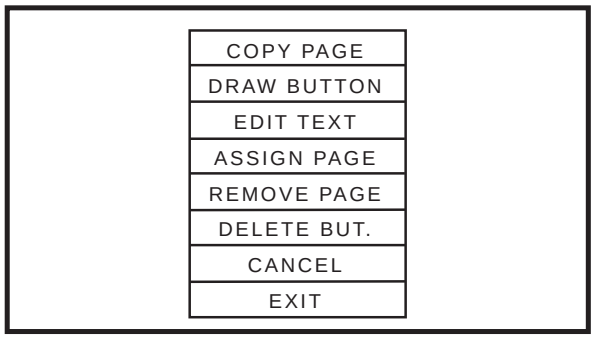
The page editor is used to create the STC-1's user interface. Editing pages is a three step process:

1. *Select a page to edit.*
2. *Place buttons, text, and symbols on the page.*
3. *Assign a page to at least one of the buttons on the page you have created (i.e., Main Menu).*

*To begin editing a page, select the **EDIT PAGE** button from the Program Options page. The STC-1 will display a list of page names that were previously created using the **CREATE PAGE** utility. Either select the desired page or press the **EXIT** button to cancel the operation. If a page is selected, the STC-1 will display that page with a drawing grid and a pull-down menu bar.*



The menu bar displays the current function being performed. To select a new function, display the menu by touching the center of the menu bar.



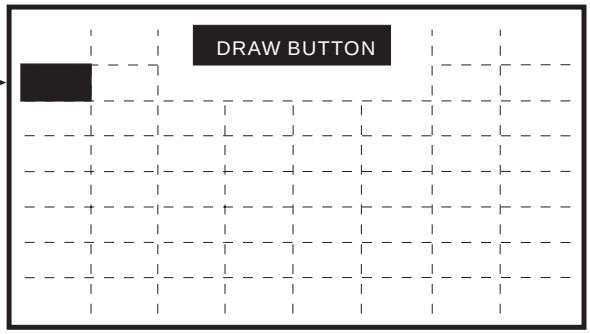
The options available in this menu are:

COPY PAGE

*Use the **COPY PAGE** function to copy a page button layout. There may be some functions like Volume, Mute, and Exit that you want to have on the same place on every page. You may also find this useful to duplicate the controls of transports (i.e., CD, laser disc, VCR, tape deck, etc.). This function copies the page button layout only. It does not copy IR codes, macros, or page titles. It does, however, copy all page assignments that are attached to the buttons. To copy a page:*

1. *Make a mental note of the page you would like to copy.*
2. *On the Program Options page, press the **CREATE PAGE** button, then name the new page.*
3. *Press the **EDIT PAGE** button, select the page you just created, and press **DRAW BUTTON** (which pulls down the edit menu). Press **COPY PAGE** to select the page you would like to copy. The display will list the names of all the available pages; press the name of the page you want to copy.*

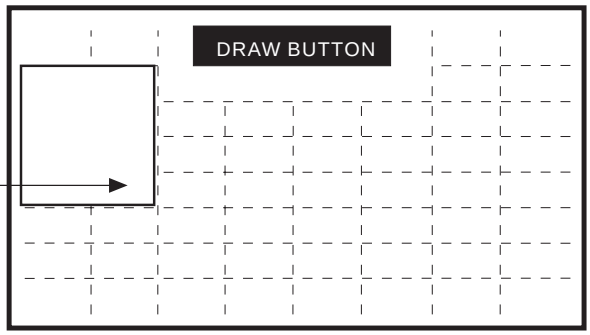
DRAW BUTTON
This function is used for locating and sizing buttons, as well as for selecting styles and shapes.



EDIT TEXT
This function is used for placing text and symbols within buttons. It is also used for entering a page title.

ASSIGN PAGE
This function is used for linking pages together. Assigning a page to a button will cause that page to be displayed whenever the button is selected.

REMOVE PAGE
This function is used to remove a page assignment from a button.



DELETE BUT.
This function is used to delete a button from the page. Using this function will also delete any infrared commands or macros associated with the button.

CANCEL
This option is used to close the menu without changing functions.

EXIT
This option is used to exit the page editor.

NOTE: The maximum number of buttons that can be created is 500. If the total number of buttons on all pages reaches 500, the STC-1 will display a "memory full" message.

2.3 Placing Buttons on a Page

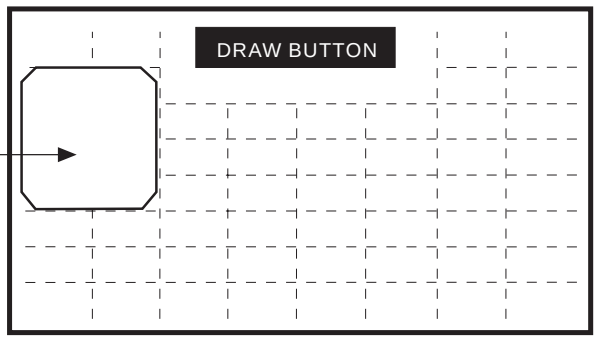
Locating, sizing, and aligning buttons on a page is very easy. To draw buttons on a page, select ***DRAW BUTTON*** *from the pull-down menu while in the Edit Page mode.*

All buttons are created by touching the drawing grid where the button is to be located, first by touching the upper left corner, then by touching the lower right corner. Any button size from 1x1 to 4x4 grid boxes can be created. Because all buttons fall within the grid pattern, they are automatically aligned.

Once a button has been placed on the page, its shape can be changed. The list of available button shapes can be displayed by touching the button while in the ***DRAW BUTTON*** *mode. When the list is displayed, either select the desired shape or press* ***CANCEL*** *to exit without making a change. There are 10 different types of button styles and shapes to choose from:*

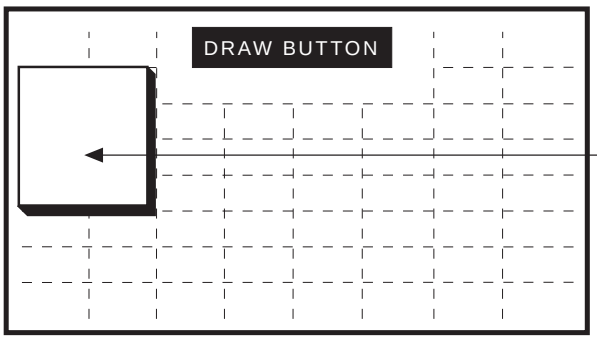
NORMAL
This is a rectangular shape.

RADIUS
This is a rectangular shape with mitered corners.



OBLONG
This shape is rounded on the left and right sides. This option is only available for buttons that are wider than they are tall.

3D
This is a three-dimensional rectangular shape.



REVERSE
This option will reverse the dark and light areas of a button.

TEXT BOX
This option is used when the button's only function is to display text. A text box will not respond when touched.

LT ARROW
This is a triangular shape pointing to the left.

RT ARROW
This is a triangular shape pointing to the right.

UP ARROW
This is a triangular shape pointing upward.

DN ARROW
This is a triangular shape pointing downward.

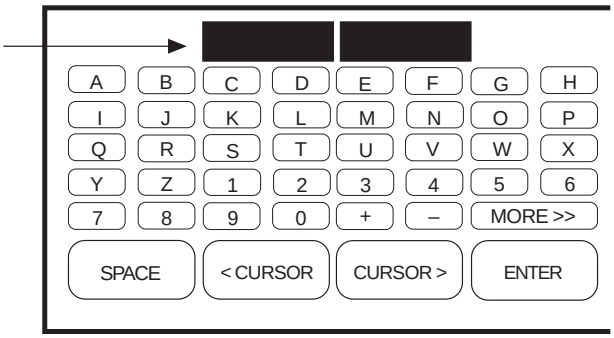
NO BORD.
This option will remove the button border. Only the text within the button will be displayed. This type of button will not respond when touched.

NOTE: Not all button shapes are available for every button size. If a button shape is not available for a particular button size, it will not be displayed in the list. For example, the arrow buttons will only appear for 1x1 and 1x2 vertical button sizes.

2.4 Using the Text Editor

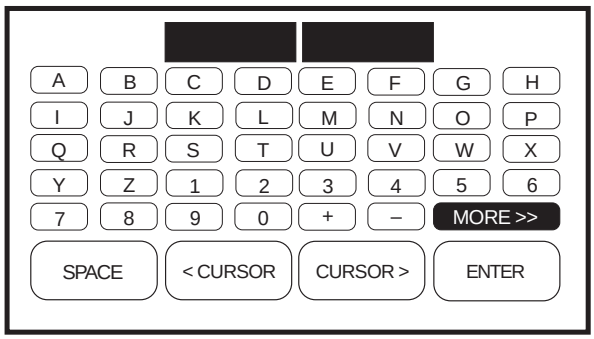
*The text editor is used to place text and symbols on a page. Text can be placed both within buttons and within the page title area. To begin placing text on a page, select **EDIT TEXT** from the pull-down menu while in the Edit Page mode. Now press either the button that you want to place text into or the page title area. (To access the page title area, press the space directly under the **EDIT TEXT** menu bar.) This displays the text editor.*

The darkened area at the top of the page represents the amount of space available in the selected button for text. The size of this space depends upon the size of the button. Two darkened areas side by side indicates that two lines of text can be entered.



*As text is entered from the touch panel, the characters are displayed in the darkened area. If two lines of text are available, pressing the **ENTER** button once will move the cursor to the area for the second line. You can also use the cursor keys to jump back and forth between the two. Pressing the **ENTER** button again will exit the text editor and place the text inside the selected button or page title area. If only one line of text is available for the selected button, the **ENTER** button needs to be pressed only once. All text is automatically centered within the selected button or page title area.*

*Additional symbols can be entered by pressing the **MORE >>** button. This will display a window containing the additional symbols. Either select a symbol to be entered or press the **CANCEL** button to close the window. Note that most of these symbols can* not *be displayed on the page title area.*



*If this is the first time you are naming a button, as you start to type in button name, the **AUTOTEXT** feature of the STC-1 will try to guess what you are writing. You may only need to type in one or two letters. If you do not wish to use what the STC-1 is suggesting, simply keep typing. The database the STC-1 uses for this is pre-defined; it will not learn any new words you enter.*

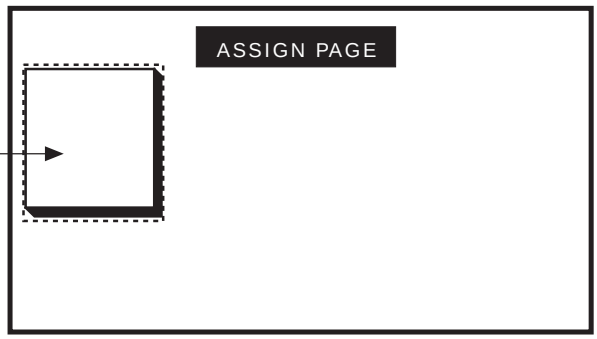
NOTE: There are no selectable character fonts. A small font is automatically assigned to all button text, and a large font is automatically assigned to the page title text.

2.5 Assigning a Page to a Button

After pages have been created and edited, they must be linked. Linking pages allows you to navigate through all of the individual pages that have been created. This is the electronic equivalent of turning a page in a book. By assigning a page to a button, the assigned page will be displayed whenever the button is pressed.

*Be sure to create an **EXIT** or **RETURN** button that returns you to the Main Menu.* **This is very important; otherwise you will create a "dead end" and have no recourse but to turn off the unit with the switch on the bottom.** *If you do reset the unit in this fashion, when you turn the STC-1 back on you will be returned to the Main Menu page; none of the programming will be lost.*

*To assign a page to a button, select **ASSIGN PAGE** from the pull-down menu while in the Edit Page mode. Now select the button for the page assignment. The STC-1 will display a list of page names, including the Main Menu page, from which you can select. Either select the desired page or press **EXIT** to cancel the operation. All buttons that have a page assignment will show a dashed box around them while in the Assign Page mode.*



*Note: You cannot assign a page to a button that has been programmed as a **TEXT BOX.***

2.6 Removing a Page Assignment from a Button

*To remove a page assignment from a button, select **REMOVE PAGE** from the pull-down menu while in the Edit Page mode. Now select the button with the page assignment to be removed. The button should no longer have a dashed border around it, indicating that the page assignment has been removed.*

2.7 Deleting a Button from a Page

*To delete a button from a page, select **DELETE BUT.** from the pull-down menu while in the Edit Page mode. Now select the button to be deleted. Note that this operation also deletes any infrared commands or macros that are assigned to the button.*

3.0
IR EDITOR

The STC-1 learns and reproduces the infrared commands of other remote controls. Each of these infrared commands must be programmed into the STC-1. This is done by using the original remote control (the donor) from a piece of equipment to teach its commands to the STC-1. There are four steps to this learning process:

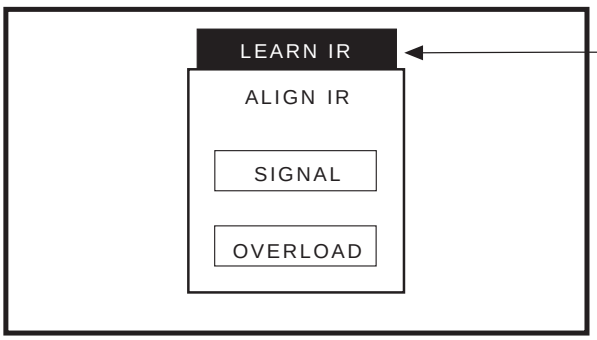
1. Aligning the donor remote with the STC-1.

2. Teaching the STC-1 an infrared command.

3. Testing the learned command.

4. Editing the learned command.

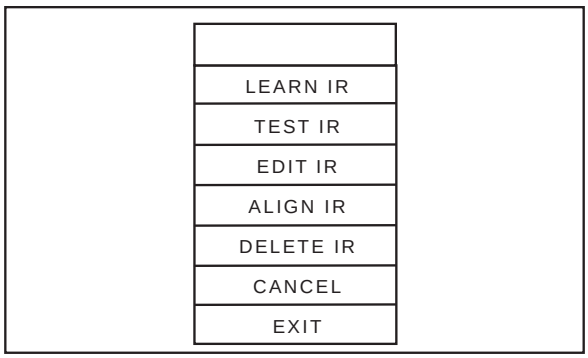
*To begin performing these steps, select the **EDIT IR** button from the Program Options page. The STC-1 will display a list of page names to select from. Either select the desired page or press the **EXIT** button to cancel the operation. If a page is selected, the STC-1 will display that page along with the **ALIGN IR** template in the center, as shown below.*



*To select a new function, press anywhere on the screen, then display the menu by touching the top of the menu bar (where it says **LEARN IR**).*

3.1 Menu Options

The options available in this menu are:



LEARN IR
This function is used for aligning the donor and teaching the STC-1 the infrared commands from the donor.

TEST IR
This function is used to verify that a command works properly.

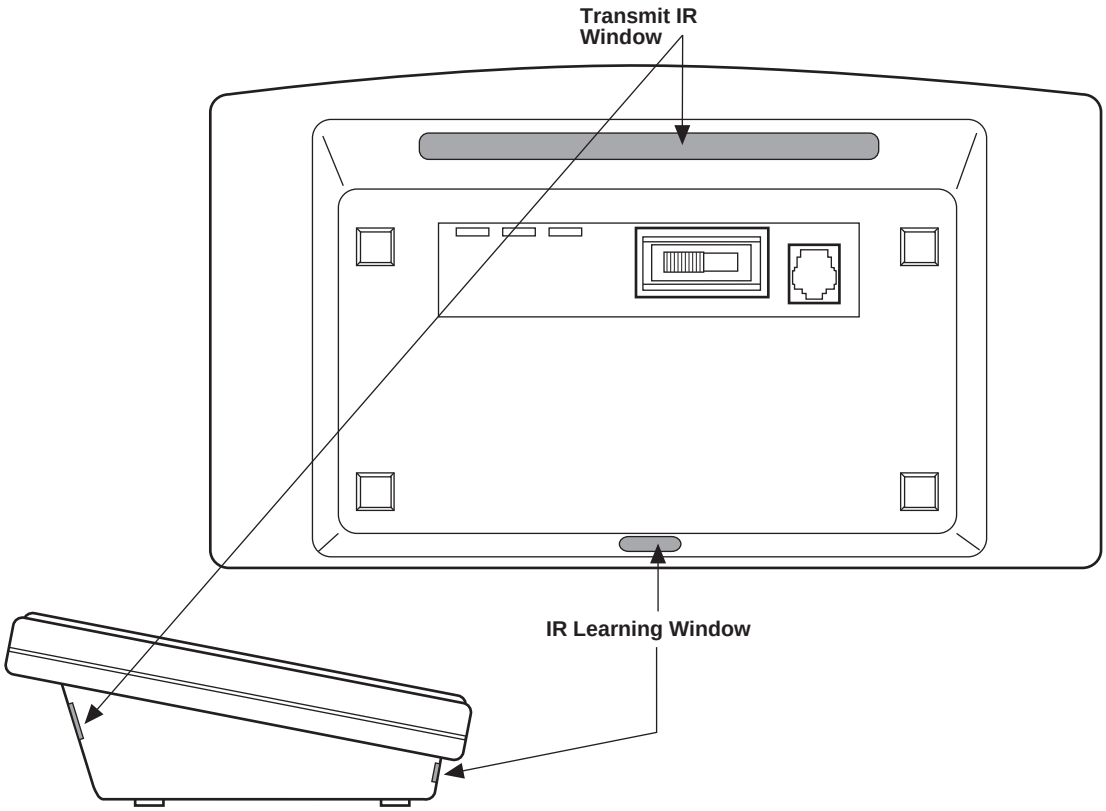
EDIT IR
This function is used to modify a command if necessary. See “Hints for Learning IR Codes”on page 19.

ALIGN IR
This function is used to properly align the donor with the STC-1's learning window.

DELETE IR
This function is used to delete an existing command.

CANCEL
This option is used to close the menu without changing functions.

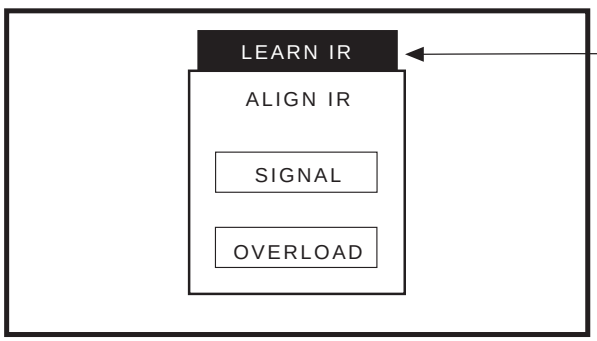
EXIT
This option is used to exit the infrared editor.



3.2 Aligning a Remote Control

To ensure that a valid signal is being received, all donor remote controls should be properly aligned with the STC-1's learning window. This is the small window located on the front of the unit.

*The STC-1 has an **ALIGN IR** function to help determine the correct position in front of the learning window. This function is invoked upon entering the Edit IR mode or by selecting **ALIGN IR** from the pull-down menu while in the Edit IR mode.*



*To properly align a donor remote control with the STC-1, first make sure the donor remote is at the same height as the learning window. It may be necessary to place the donor remote control on a higher surface than the STC-1. Now press any key on the donor remote control, moving the control back and forth in front of the learning window. The donor remote control is located at the proper distance from the STC-1 when the **SIGNAL** box is on (darkened) and the **OVERLOAD** box is off (clear). If neither box is on, the STC-1 is not detecting any infrared signal.*

*If the **SIGNAL** box will not turn on without turning on the **OVERLOAD** box, you should ignore the overload indicator. This will only happen for certain types of infrared commands. These special types of commands can usually be learned from any distance as long as the **SIGNAL** box is on.*

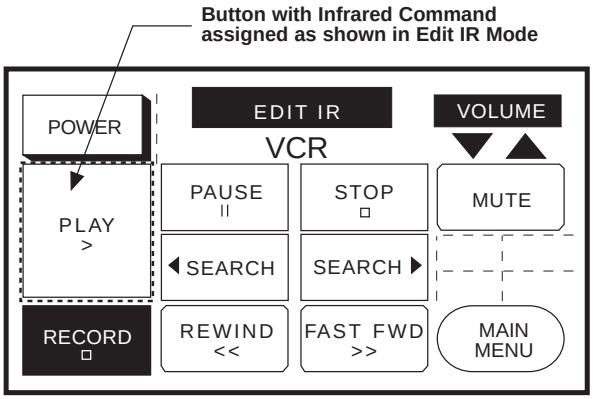
Touching the display anywhere will cancel the Align IR function.

3.3 Sending Infrared Commands to the STC-1

Once a donor remote control is properly aligned, the STC-1 is ready to start receiving and storing the infrared commands. First, make sure the STC-1 is in the Edit IR mode and Learn IR is selected from the menu.

Next, select a button on the STC-1 that you wish to assign a command to. After pressing the button, the STC-1 will display a ***READY*** *message. Now press the key on the donor remote control that transmits the command that you want the STC-1 to learn. Continue to hold the key down until the STC-1 displays O.K.*

After the command has been processed and stored, the STC-1 will display ***LEARNED****. If an error message is displayed, realign the donor remote control and try again. All buttons that have an infrared command assigned to them will have a dashed border displayed around them while in the Edit IR mode.*



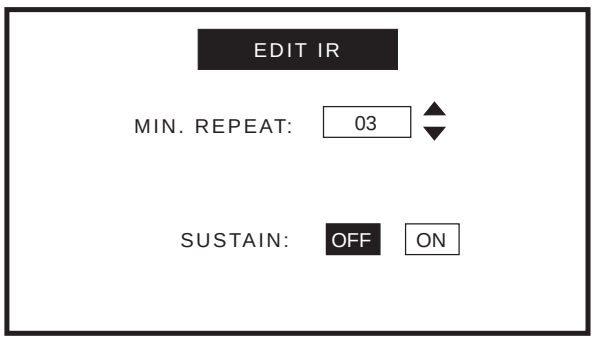
3.4 Testing Infrared Commands

After a command has been learned by the STC-1, you should test it to make sure it behaves properly. This can be done by selecting ***TEST IR*** *from the pull-down menu while in the Edit IR mode. To test a command, point the STC-1 at the equipment to be controlled and press the appropriate button on the display. If the command does not work properly, it may need to be edited or re-learned.*

3.5 Editing Infrared Commands

Most infrared codes will transmit continuously as long as the remote control key is held down. This means that either the entire code or some part of it is being repeated over and over. Some infrared receivers need a command to be repeated a certain number of times to work properly. This may be anywhere from two to twenty times. Also, some infrared receivers may not *work properly if the command is repeated at all. This is why the STC-1 allows you to adjust the number of command repeat times and to enable or disable continuous transmission.*

To edit an infrared command, select ***EDIT IR*** *from the pull-down menu while in the Edit IR mode. Now select a button with an infrared command that you want to edit. This will display the Edit IR page.*



The repeat times can be adjusted from 0 to 25, and the ***SUSTAIN*** *function can be turned on or off. If the* ***SUSTAIN*** *function is turned off, the command will be transmitted the selected number of repeat times. If* ***SUSTAIN*** *is turned on, the command will be transmitted for as long as the button is pressed* plus *the number of repeat times. The default setting for most commands is* ***SUSTAIN ON*** *and* ***MIN. REPEAT = 3.***

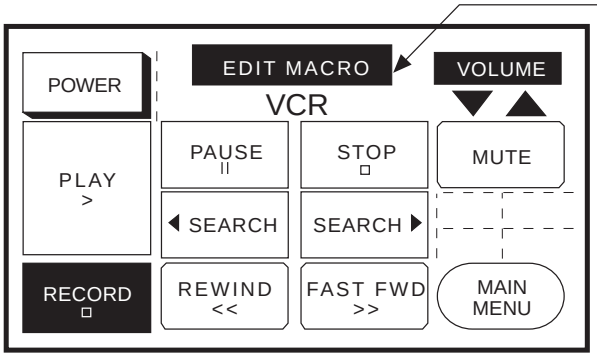
Even if a command works properly, increasing the number of repeat times may be necessary if the command is to be used in a macro. Since macro commands are not sustained while a button is pressed, they may need to automatically repeat more times to be recognized.

*A macro is a series of infrared commands that is executed by pressing a single button. For example, you could create a macro called **"MOVIE"** that turns on the TV, selects the VCR input, turns on the VCR, dims the lights, and starts the movie. Macros are one of the simplest ways to make a complicated system easy to use.*

Creating a macro on the STC-1 is a three step process:

1. *Select the button that will execute the macro.*
2. *Edit the macro. This step involves selecting the commands that the macro will execute and inserting any necessary time delays.*
3. *Test the macro to make sure it performs as expected.*

*To begin creating a macro, select the **EDIT MACRO** button from the Program Options page. The STC-1 will display a list of available page names. Either select the desired page or press the **EXIT** button to cancel the operation. If a page is selected, the STC-1 will display that page along with a pull-down menu*



bar.The menu bar displays the current function being performed. To select a new function, display the menu by touching the center of the menu bar.

4.1 Menu Options

The options available in this menu are:

EDIT MACRO
This function is used for inserting infrared commands and time delays.

TEST MACRO
This function is used to verify that a macro executes properly.

DELETE MACRO
This function is used to delete an existing macro.

CANCEL
This option is used to close the menu without changing functions.

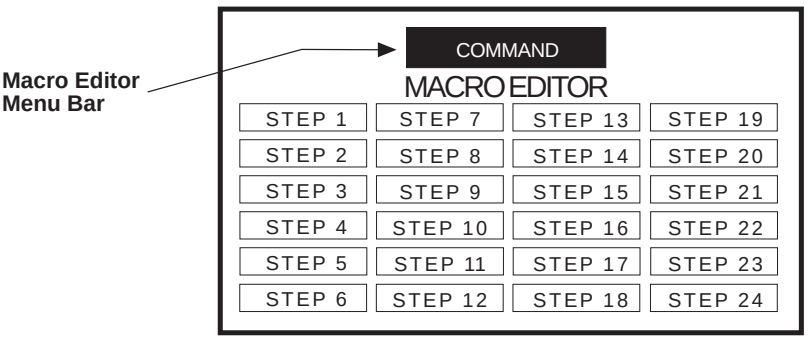
EXIT
This option is used to exit the macro editor and return to the Program Options page.

4.2 Editing a Macro

*After selecting a button to which to assign a macro, the STC-1 will display the **MACRO EDITOR** page. This page displays the 24 possible steps in the macro along with a pull-down menu bar.*

The menu bar displays the current function being performed. To select a new function, display the menu by touching the center of the menu bar. The options available in this menu are:

COMMAND
This function is used to insert an infrared command into a macro.



TIME DELAY
This function is used to insert a time delay into a macro.

INSERT BEFORE
This function is used to insert a step in front of another step. It is used when a command or time delay must be placed before an existing step.

REMOVE STEP
This function is used to remove a command or time delay from a macro.

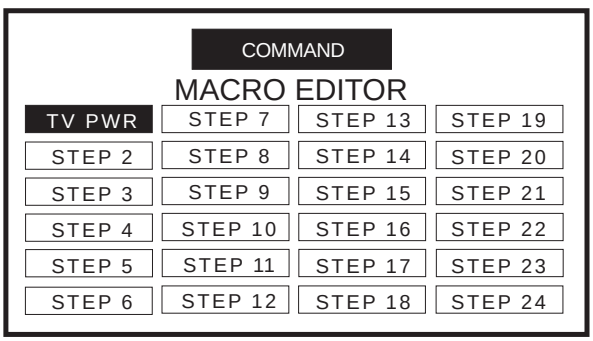
CANCEL
This option is used to close the menu without changing functions.

EXIT
*This option is used to exit the macro editor page and return you to the main **EDIT MACRO** page.*

4.3 Inserting an Infrared Command

*First, select the **COMMAND** option from the Macro Editor menu. Next, select the step position where you want the command inserted. This will cause the STC-1 to display a list of page names. Either select the page that contains the infrared command to be inserted or select the **EXIT** button to cancel the operation. If a page is selected, the STC-1 will display that page with **SELECT STEP** in the menu bar. Now select the button that contains the infrared command to be inserted. If a valid button was selected, the STC-1 will return to the macro editor page with the command inserted in the macro step.*

The name that appears in that macro step is taken from the first line of the button name and can be up to 8 characters long. If there is no IR code assigned to the button, no command will be learned, and the step button will still show the step number.

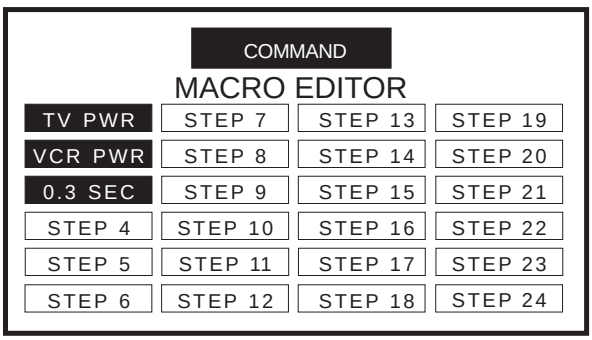


4.4 Inserting a Time Delay

Some commands in a macro may need a short time delay between them. There are basically two types of situations in which this might be necessary:

1. *If one of the commands in a macro turns a device on (e.g., the power command for a TV), the device may need several seconds to "warm up" before it can receive another command.*
2. *If the macro transmits back-to-back commands to the same device, a very short time delay may be necessary to help the device recognize that there is more than one command.*

*To insert a time delay into a macro, select the **TIME DELAY** option from the Macro Editor menu. Next, select the step position where you want the time delay inserted. This will cause the STC-1 to display a numeric keypad. Use the numeric keypad to enter the desired time delay in seconds. The longest time delay that can be entered is 9.9 seconds. If a time delay longer than 9.9 seconds is needed, you can insert multiple time delays in a row.*



NOTE: The maximum number of macros that can be created is 100. If the total number of macros reaches 100, the STC-1 will display a "memory full" message.

4.5 Macro Hints

You cannot string macros together by calling up another macro as a step within the macro you are editing.

A button can contain a macro, an IR command, and a page assignment. When a button is pressed, the STC-1 will first send the IR command, then run the macro, and finally go to the page assigned. Remember that you cannot assign a button to a macro unless there is a "learned" IR command associated with it. If you would like to call up another page at the end of a macro, go to the Edit Page mode and assign a page to the same button that runs the macro. The assigned page will be displayed after the macro has been completed.

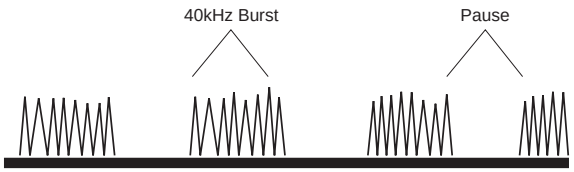
5.0 IR CODE BASICS

There are two types of infrared codes that are commonly used for consumer electronics products: Frequency Modulated and Pulsed.

5.1 Frequency Modulation

This type of transmission modulates the IR energy at a fixed carrier frequency. The vast majority of consumer electronics remote controls use a carrier frequency around 40 kHz, although the carrier can range from 20 kHz to 500 kHz or higher. While the STC-1 is rated to handle carrier frequencies between 20 kHz and 111 kHz, in practice it can learn some carrier frequencies outside of this range.

The actual code consists of bursts of IR energy modulated at the carrier frequency, separated by pauses.



The code is defined by the length of each burst and each pause, as well as by the carrier frequency.

5.2 Pulsed IR Codes

This type of transmission does not use a carrier frequency.

Pulsed codes are quite common in cable TV converter boxes.

5.3 How the STC-1 Learns IR Commands

There are many different encoding schemes used for IR codes. The burst and pause times have fixed lengths, variable lengths, or some combination of the two. To learn the code, the STC-1 "records" a sample of the code in a manner similar to the way a tape recorder records sound. Once a sample of the code has been taken, it is analyzed to find any repeating patterns.

Some codes continuously repeat themselves for as long as the button is pressed. Others send a code followed by a "keep alive" pattern. Some codes don't repeat at all. Any of the above types of codes can also have some sort of preamble in front of them. It is very important to capture the preamble in this type of code. The IR learning buffer of the STC-1 is large enough to accommodate the preamble.

When a repeating pattern is found, extra repeats are stripped off before the code is stored in memory. The number of repeats is also stored so the code can be reproduced accurately.

If the buffer was filled up during learning, it is assumed that the pattern should be repeated for as long as the key is pressed. This is common for commands such as Volume, Balance, and Scan — functions that may need to be continuously repeated. For these types of commands, ***SUSTAIN*** *is set* ***ON*** *as the Edit IR default. If the buffer is not filled,* ***SUSTAIN*** *is set* ***OFF*** *and the repeat pattern is displayed as the* ***REPEAT TIMES.*** *The default* ***REPEAT TIMES*** *for a code with* ***SUSTAIN ON*** *is three. This means the repeating pattern will repeat three more times after the pressed key is released. You can, of course, edit this if needed, in the Edit IR command mode.*

If the code uses a carrier frequency, that frequency is also stored with the code.

5.4 Hints for Learning IR Codes

*The **OVERLOAD** indicator in the ALIGN IR template is only an approximation. The STC-1's software makes its "best guess" as to whether the remote control is too close. If both the **OVERLOAD** and the **SIGNAL** indicators flash in tandem, regardless of distance, the code is a pulsed type. The overload indicator will not function properly with pulsed codes, so trial-and-error is the only approach. Fortunately, pulsed codes are not as sensitive to distance as modulated codes are. **Generally, it is better for the donor remote and the STC-1 to be too close together than to be too far apart.***

*Always place the STC-1 and the donor remote control on a flat surface. You may find it necessary to elevate the donor with a book or similar object to align them vertically. Once you have learned and tested a command from a remote, try not to move it until you have learned all the codes. If you do accidentally move either remote, again select **ALIGN IR** from the menu.*

Some commands may take a long time to learn, particularly sustain commands like Volume and Channel Up/Down.

Many commands can be made more reliable if the number of repeat times is increased. This is especially true for commands assigned to buttons that are likely to be briefly "tapped" or for commands that are part of a macro. Increasing the number of repeat times increases the probability of the command "getting through." This is essentially a trade-off between increased reliability and an increase in the length of time required to transmit a command. This can take a bit of fine tuning on complicated macros.

6.0 PROGRAMMING HINTS

Keep in mind that the goal of the STC-1 is simplification. Try not to put too many functions on each page.

To program the STC-1 most efficiently, it is useful to make basic templates of common types of controls, i.e., CD, Laser, VCR, transport controls, volume controls, alpha-numeric keypads, etc. These templates can then be copied and modified for specific devices and/or installations. Keeping similar types of controls looking and feeling similar on the STC-1 viewscreen will reduce the learning curve.

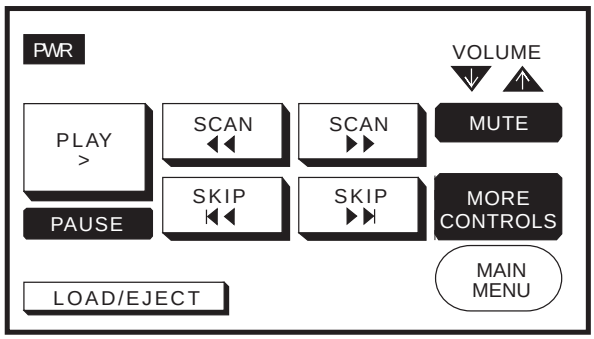
Develop a convention for your button styles. For example, you may wish to use: Radius buttons for direct commands like surround sound modes, Oblong buttons for toggling functions like Power, and 3D buttons for page flips.

*Consider creating a basic page that contains only Volume and Mute controls as well as an **EXIT** button. Assign the **EXIT** button to the Main Menu page. You can now copy this page as the basic template for all the rest of your pages, since it is probably a good idea for every page to have Volume and Mute functions.*

*The **EXIT** button is critical; without it, the page would be a dead end, since once entered, there is no way out (other than to turn the unit off, then on, using the **ON/OFF** switch on the bottom). Remember that although the **COPY PAGE** function will not copy the IR commands, it will copy the Page Assignment; in this way there will always be an **EXIT** button on every page derived from the basic page.*

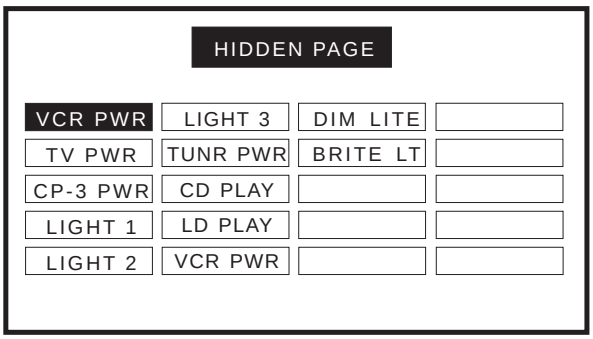
You can also copy this basic page to create a template for other templates, such as Transport and Keypad pages, which can be used for multiple products.

*Try designing a Transport page; pages with **PLAY, SCAN, SKIP, STOP,** and so on are useful for **CD** and **LD** players, **VCRs,** etc. Not only will this speed up the programming, but also it will make the unit simpler to operate if all the machines look and feel the same.*



A Keypad page will also have many applications for TVs, cable boxes, disc players, and so on.

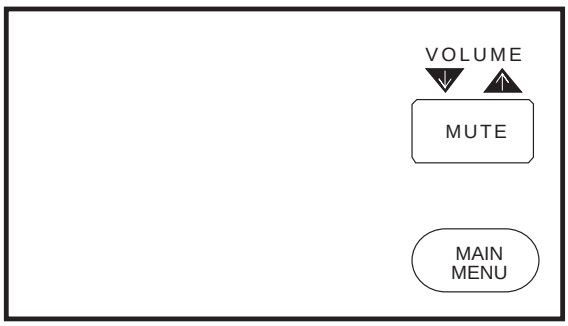
*You may also find it useful to create a hidden page that will not be seen by the end user. This page will contain IR codes needed for macros but not needed for general operation. When you program these types of buttons, make sure to label the buttons in a way that will make sense when you see its abbreviated name on the Macro Step. The reason for this is that the Macro Step will use the first line of text on the button, up to eight characters long. For example, on the basic component pages, there will often be a button for power. If you write a macro that powers on several components, in the Macro Editor all of the steps for this will say **POWER;** this may be confusing should you need to edit the macro. If you duplicate these power-on commands on another page that the user does not see, you can label them more completely: i.e., **CDPOWER, LDPOWER, TVPOWER,** etc.*



The PC Interface program contains some basic templates (keypads, transport controls, etc.) that can be downloaded and modified. You can also build your own library of pages to be downloaded the next time you use the same product. The interface library will save the page graphics and IR codes.

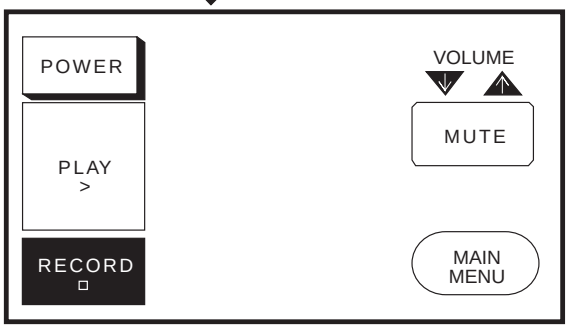
6.1 Summary: Creating Pages

Create a NEW PAGE and add controls common to all pages.

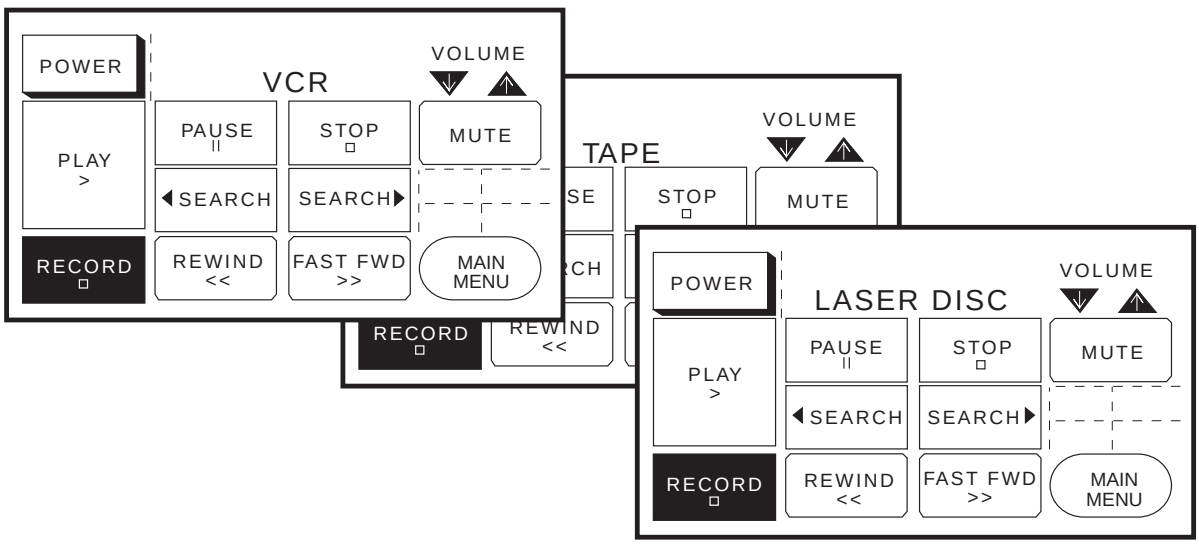


Copy this page.

Use as a template to create other pages, adding controls specific to a number of devices, like transport controls, or a keypad.



Then copy these pages, assign them to specific devices, and assign IR commands to buttons.



TROUBLESHOOTING 7.0

Display is Dim or Unreadable.
Try adjusting the LCD contrast on the Special Functions page. By nature, the contrast of an LCD varies with temperature. This can be from external variations or internal ones (battery charging). If the unit is cold, it may take a couple of hours to reach room temperature and for the LCD to stabilize.

Unit Does Not Respond at All.
*Check the **ON/OFF** switch on the bottom of the unit. Also try switching the unit off for a few seconds before turning it back on. If the unit still doesn't respond, leave the AC adapter connected for a few hours and try again.*

Signal and Overload Indicators Flash, Regardless of Distance.
The donor remote control is a pulsed type. Ignore the indicators, place the donor remote 6-8" from the unit, and learn and test a command. See "Hints for Learning IR Codes" on page 19.

Macro Edit Won't Learn Some Commands.
You can only insert a button with a valid IR command as a macro step. If you attempt to insert any other type of button (a button that represents another Macro or Page Assignment), the STC-1 will double-beep (if the audible beep option is turned on) and return you to the Macro Editor page with the step unassigned. See "Editing a Macro" on page 15.

You're Stuck.
*If you create a page without an exit, and if you get to that page when you are operating the STC-1, you will need to reset the STC-1 by turning it off, then on, using the **ON/OFF** switch on the bottom of the unit. You will return to the Main Menu page, and none of the programming will be lost.*

Fuel Meter Doesn't Indicate Charging.
*The STC-1 must be discharged at least 10% before the unit will begin recharging. The Fuel Meter will not reset until the STC-1 is finished recharging. Try to avoid unplugging the STC-1 while the **CHARGING** indicator is on. Doing so will increase the time required to charge the unit.*

Learned IR Commands Don't Work.
*Although the STC-1 has very flexible learning capabilities, some devices are outside its capabilities. The normal range of IR carrier frequencies that the STC-1 can handle is between 20 kHz and 111 kHz. Some companies use modulation frequencies well outside this range. Many B&O remote controls, for example, modulate at around 455 kHz. While the **LEARN IR** indicator will show **O.K., LEARNED,** and the transmit LED indicator in the front IR window will flash, the IR receive indicator on the devices whose remote control you are attempting to learn might not flash. Remote controls operating at these very high frequencies cannot be learned by the STC-1.*

You Cannot Learn IR or Edit a Macro.
*The button is programmed as a text box. Select **EDIT PAGE** from the **PROGRAM OPTIONS** page. Select the page with the button you wish to edit. Press the button you wish to edit and select **NORMAL** or **RADIUS** from the **DRAW BUTTON** menu. You may now exit and go back to **EDIT IR** or **EDIT MACRO.***

7.1 Contacting JBL

You can contact JBL at the following address:
JBL Consumer Products, Inc.
80 Crossways Park, West
Woodbury, NY 11797
516.496.3400

8500 Balboa Boulevard,
Northridge, CA 91329

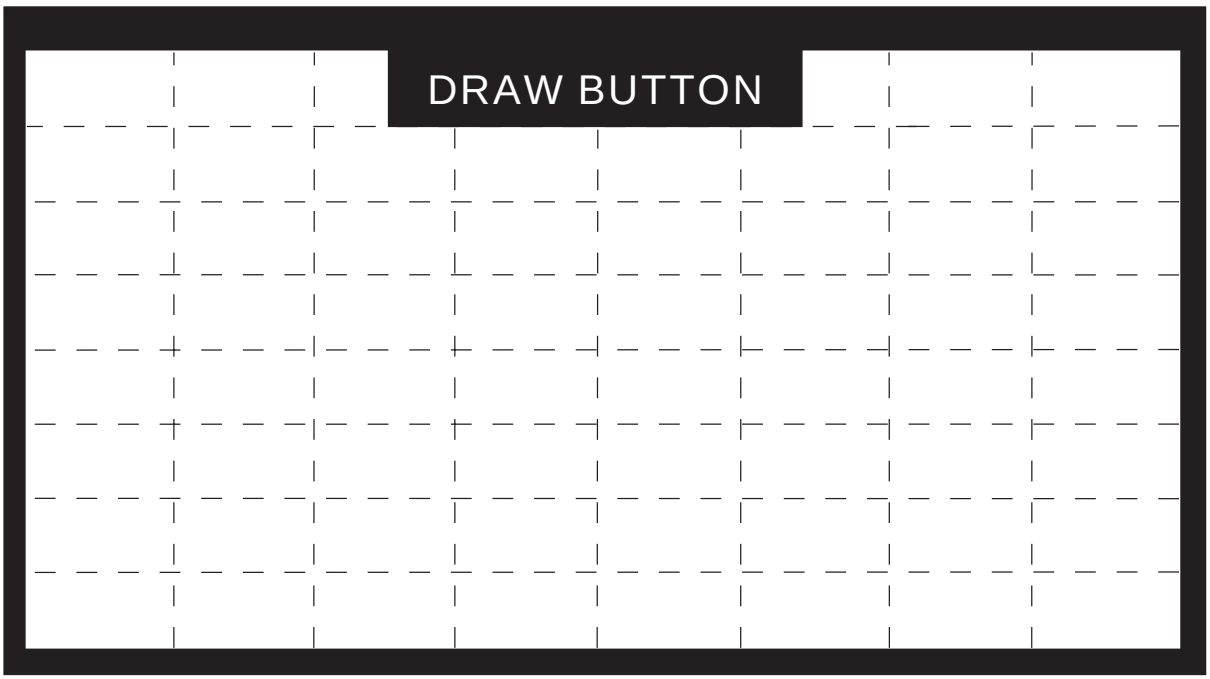
SPECIFICATIONS 8.0

Power:	*Six (6) volt Ni-Cad Battery Pack*
Infrared Control Range:	*Thirty (30) Feet (9.0m) @ 60 Degrees*
Infrared Carrier Frequency Range:	*20kHz–111kHz*
Display:	*256 x 128 STN (Blue on Paper White)*
Backlight:	*Dual CFL*
Power Consumption:	*1000 mA Maximum (Run Mode)*
	175 mA Maximum (Stand-by Mode)
	700 µA Maximum (Powerdown Mode)
Nominal Run Time on Full Charge:	*3 hours*
Maximum Number of Buttons:	*500*
Maximum Number of User-Defined Pages:	*23*
Maximum Number of User-Defined Macros:	*100*
Maximum Number of Steps per Macro:	*24*
Total System Memory:	*128K Bytes*
Communications:	*PC Interface Available*
Dimensions:	*9" x 5.3" x 3.5" (L x W x H)*
Weight:	*1.9 lbs.*

All specifications subject to change without notice.

9.0
APPENDIX A:
SCREEN TEMPLATES

You can copy and use the templates below as an aid when planning and designing button and page layouts. Use the templates to sketch pages before actually programming them into the STC-1.



USE THE AREA BELOW FOR NOTES

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11.0
JBL SYNTHESIS LIMITED WARRANTY

The Synthesis products listed below are warranted for the period stated from the date of original purchase. Amplifiers, Equalizers, Signal Processing Package, Surround Processor, and Touch Screen Remote—2 Year Warranty. This warranty applies to non-commercial, residential use only.

Who is Protected by this Warranty?
Your JBL warranty protects the original owner and all subsequent owners, so long as the original bill of sale is presented when warranty service is required.

What is Covered by the JBL Warranty?
Your JBL warranty covers all defects in material and workmanship with the following specified exceptions. These are (1) damage caused by accident, unreasonable use or neglect (including the lack of reasonable and necessary maintenance); (2) damage caused by improper installation or adjustment; (3) damage occurring during shipment (claims must be presented to the carrier); (4) damage to or deterioration of any accessory or decorative surface; (5) damage resulting from failure to follow instructions contained in your owner's manual; (6) damage resulting from the performance of repairs by someone other than an authorized JBL warranty station; (7) any JBL unit on which the serial number has been effaced, modified, or removed; (8) units which have been altered or modified in design, appearance or construction; (9) products sold on an "as-is" or final sale basis. This warranty covers only the actual defects within the product itself, and does not cover the costs of installation or removal from a fixed installation, normal set-up or adjustments, claims based on any misrepresentation by the seller, or performance variations resulting from installation related circumstances such as program source quality or AC power.

How to Obtain Warranty Service.
If your JBL product ever needs service, we may direct you to an Authorized JBL Warranty Station, or ask you to send your unit to the factory for repair in which case we'll also supply a Service Return Authorization and complete shipping instructions. If the product was purchased in a country other than the USA, it is necessary to return the product to the distributor or selling location in the same country. Either way, you'll need to present the original bill of sale to establish the date of purchase. Please do not ship your JBL product to the factory without our prior authorization. In the United States, please call 1-800-336-4JBL for the location of the authorized warranty station nearest you.

If service under this warranty is not necessary, but you have questions regarding the installation or operation of this unit, please contact your authorized JBL retailer or call 1-800-336-4JBL for further assistance.

Who Pays for What?
JBL will be happy to pay all labor and material expenses for all repairs covered by this warranty. If necessary repairs are not covered by this warranty, or if a unit is examined which is not in need of repair, you will be charged for the repairs or the examination.

Although you must pay any shipping charges incurred in getting your JBL product to an Authorized Warranty Station or to the factory, we will pay return shipping charges within the United States if the repairs are covered by the warranty. Please be sure to save the original shipping cartons because a nominal charge will be made for additional cartons.

LIMITATION ON IMPLIED WARRANTIES.
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE ARE LIMITED IN DURATION TO THE LENGTH OF THIS WARRANTY, UNLESS OTHERWISE PROVIDED BY STATE LAW.

EXCLUSION OF CERTAIN DAMAGES.
JBL'S LIABILITY IS LIMITED TO THE REPAIR OR REPLACEMENT AT OUR OPTION, OF ANY DEFECTIVE PRODUCT AND SHALL IN NO EVENT INCLUDE INCIDENTAL OR CONSEQUENTIAL COMMERCIAL DAMAGES OF ANY KIND.

ANY REPLACEMENT UNITS OR PARTS MAY BE NEW OR REBUILT. JBL RESERVES THE RIGHT TO REPLACE A DISCONTINUED MODEL WITH A COMPARABLE MODEL.

SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS AND/OR DO NOT ALLOW THE EXCLUSION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS AND EXCLUSIONS MAY NOT APPLY TO YOU.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

We sincerely thank you for your expression of confidence in JBL products. This equipment has been painstakingly assembled by highly trained craftspeople. It should give you many years of musical enjoyment.

JBL Consumer Products, Incorporated
80 Crossways Park West
Woodbury, NY 11797
8500 Balboa Boulevard
Northridge, CA 91329
800-645-7484

Part #: JBLSTC-1OM5/94